# AUDIO ETC.

**Edward Tatnall Canby**

## "A Study in Greatness and Tragedy"

I've always been fascinated by the lives of famous inventors. No other sort of book, not even a novel, can so positively glue me to my seat and my eyes to the page for hour after hour. There isn't a mystery story in the world to match.

Last year, for instance, I absorbed a whopper, a giant book on Thomas A. Edison. Did it in a few days' leisure moments. Then came the Stephensons, father and son, who between them did the most to develop the steam loco and the railroad system in England. Great fun.

But now I've discovered a real dilly, a neglected work, at that, which I think is of absolutely first importance—right in the middle of our own field, electronics, audio, radio, hi-fi.

The book, "Man of High Fidelity," is out of print because it is twelve years old. It was written too soon. I hope it won't be out of print for much longer. It should be put into paperback quickly. For if even a volume of the sort was timely *right now*, in our area, this is it.

It came out as a tribute to its inventor-subject soon after his death. At that point, he was at a low stage of fame and troubles—hence the suicide which ended his career—and his work was in an even lower stage of enforced discredit, outrageously so, as it is easy to say today after the fact. No wonder the biography went out of print! Now, all these years later, it has been rediscovered along with the inventor himself. An exciting story.

Now who could this man be, so subject to neglect in the 1950's, now making a posthumous come-back? Let's see, (you're saying to yourself), could it be Marconi?

No—no, not the father of wireless telegraphy, who has been sitting safely in his proper historical niche for a long time. How about Hertz, then, what with all this recent fuss about Hz and all that? Nope, no hertzes. Nor any maxwells, gausses, henries. (Maxwell would make a tough biography for those who can't absorb the math in his Dynamical Theory!).

Our man is much more recent. Right now, he is at last re-emerging, thirteen years after that tragic suicide, as a major force in electronic history and one of the great original American inventive minds along with Morse, Edison, and such. What makes his biography so exciting, then, is that the boondocks are still full of people who knew him, including many of our readers—his radio associates, his old engineering cronies, colleagues, assistants, students, his lawyers and, of course, his adversaries in many a fearsome legal battle involving enormous fortunes in the radio-electronics game. There are even more of us still around who have at least in some way been personally touched by the dramatic events in this man's life, a "study in greatness and tragedy," as the book jacket puts it. That includes me, decidedly. My life is all mixed up in this book, too.

Indeed, the text of it bristles with names still familiar to almost all of us, men who are very much on the scene in these mid-sixties, some thirteen years after the great man's tragic death.

Who else could it be but *Major Edwin H. Armstrong?* Who else but the man whose early regenerative circuit in 1912, when he was still in Columbia at engineering school, finally put the vacuum tube to use in the classic ways we know so well and explained its operation both as an amplifier and as a controllable oscillator? Who but the man who in 1918 put together out of a passel of known but useless principles the standard receiver circuit that has dominated radio (and TV) ever since, the superheterodyne? Who but this same man who, as his last invention, crowned his career with that extraordinarily ingenious broadcast system, FM radio—'way back in 1933—and did not live to see its vindication? I need say no more. *Armstrong*, of course.

The Major, as he was always called, was a familiar figure for years and years around the radio clubs, the meetings of the I.R.E., assorted august court rooms and anywhere that radio gadgetry might be found. A big, burly man with a bald head and belligerent, bulldog features, he had the fighting mind of a bulldog too and did not even look like a "bright" inventor. But he was, as all who heard his forcefully clear papers (and have read them since) are aware. He saw straight through, where others could find only confusion; his theories and his factual inventions *worked*—often in the face of accumulated authority to the contrary.

He was the father of modern radio and TV broadcasting, inventor of the major circuits that made the whole enormous broadcast development possible. He is also father to our own industry, and doubly so. First via the very principle of electronic amplification, discovered in the 1912 regenerative circuit. And second via FM radio and his ceaseless work in the early FM years to develop better audio components that would match the superior quality of the FM transmission.

FM stereo is now taking its full place as the last link in the complete stereo chain of home entertainment. But it was FM which furnished the very first link, as well. FM sound quality, in those first broadcasts of the early war years, sparked the "hi fi" movement and the large component industry that has since grown up to satisfy it.

I should know. That's where I came into a small corner of this picture. Though I had owned and even built components of a sort since the mid-thirties, it took FM to show me what "high fidelity" could mean. I worked in one of the early New York FM stations, WABF, and it was there, during the war, that I first heard those wide-range sixteen-inch pressed red vinly transcriptions at 33⅓ ips which were the forerunners of the LP record. They were played on Western Electric 9A wide-range magnetic reproducers—a revelation. But more important, I heard the same sounds *over the air*, via FM, precisely the original sounds, as though the radio transmission were entirely transparent, non-existent. Believe me (as many will remember), that was an experience in those days.

I had heard it before, in a way. I lived in a communal early-war-time "pad" in the Village along with one of the very first FM receivers—and a lad whose job was at the pioneer Armstrong FM station, W2XMN, Alpine, N. J. Mornings, he took an armful of my 78 records with him to the station. Evenings, we heard them played back via FM, along with casual comments in hi-fi. Thus did I furnish a bit of aid and comfort to the cause!

That was during the war, and though FM was already a dozen years old, very few people could not hear the little known miracle. FM, on its old band down around 40 MHz, was frozen for the Duration. Only a handful of tuners had been sold before the big clamp-down—just enough to keep FM on the air, feeding on future hopes. Thus, at that time, very few people outside the profession knew anything of the man who in early radio "ham" days had been so well known—"Feedback Armstrong," they had called him then. At the full tide of his thirty years of accomplishment, Armstrong was even less known to the general public than in the years after 1912 and his first fame.

Considering its present acceptance, there was an amazing indifference—or so it seemed—towards FM, at this time when it was already long-since a perfected system, on the air. Perhaps I was naive, myself, but I do remember my own bafflement, that such a superior arrangement should not *immediately* be taken up by those who knew best—radio people.

As recounted in these columns before, instead, our FM station made a brave show of expansion after the war, then collapsed. We lost our jobs because, for no visible reason, FM was a dying duck. And it was so obviously *good*, as we knew! It was a shock that I will never get over, that collapse—but imagine what it was for the Major himself, who had fought for FM already more than a dozen years?

We knew it was good; yet we heard



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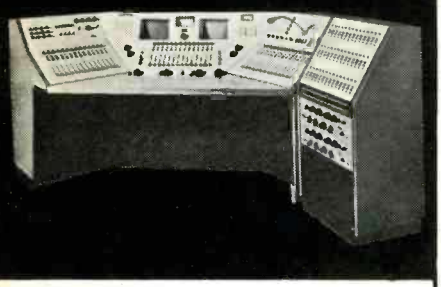

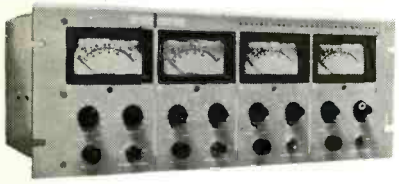

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the denials of FM ourselves, smoothly intoned on every side. FM was visionary, impractical; it wouldn't work on a larger scale, etc. But the big argument, of course, was that people *didn't really want* FM. People didn't like "hi-fi" sound. They preferred the good old AM quality. Not too much was said about staticless reception. That argument was hard to beat, so it just didn't get mentioned very often.

Certain large corporations put an astonishing amount of effort into persuading all and sundry, including the press, that people didn't like wide-range sound. Elaborately objective tests proved it handily, with no trouble at all, and the corporations presented all this evidence in fancy demos—to their own satisfaction if not mine. It wasn't only in FM. When English Decca (later called London) brought out the first ffrr 78 shellac discs, with wide-range sound on them, I attended one of those interesting press parties where proof was abundantly offered as to the unimportance of this development. In fact, a highly respected member of the audio profession, then as today, was constrained into being master of ceremonies. It was, alas, just a part of his job, I guess.

In 1945, an FCC order dislodged FM from its band and kicked it upstairs, thereby killing off all the old receivers and most of the remaining enthusiasm for a new FM start. Strange coincidence? Were there good reasons for shifting the FM band at such a cruel moment?

That's the sort of thing you will read about—and many more situations of the same sort—in this Armstrong biography. It could have been a wholly "black and white" book, in which case it would have been far less interesting to read, for there are always arguments pro and con in such matters, and a good writing job requires a detailed look at the arguments of both sides. Burgeoning TV, the coming commercial wonder-medium as anybody could see, definitely did need air space and a lot of it. TV was on the make, and the existing radio networks were going to command the TV success within their own enoromously powerful set-up. FM, small as it was, contained the seeds of an anti-network revolution.

And so it was a strange *coup de grâce* —almost—at that particular moment, but one that could in many ways be defended as "reasonable," from some viewpoints. Like, say, the network viewpoint. Yet it did hit at an obviously superior radio system at the very point where it might have begun to grow in a healthy fashion. It was nearly fatal to FM, that band change on top of everything else. Was it so intended, even by indirection?

Intended or no, I could sense the steady pressure, something negatively invisible, against FM. Bland, curiously shapeless, nevertheless it was mysteriously choking the new system right in front of our eyes and ears. A most unpleasant feeling, I can tell you. From our viewpoint there was—nothing. Just a lack of success, where there should have been success. A dead weight, not felt and yet somehow sensed, as if FM were sickening away from its own inherent inadequacy—the finest radio transmission in existence. And far in the dim background the big radio moguls of the AM networks moved in their mysterious ways, remotely ignoring our little FM world. None of *their* business! That was the way it all filtered down to us on our level.

Now, via this Armstrong biography, I know at last what was actually going on, 'way up there. And it all fits. Same for the rest of the FM battle, and for the numerous other prolonged battles that never left this man in peace. As you follow Armstrong through the mass of smoothly argued denials, interferences, obstructions, defamations, that sapped away at his extraordinary vigor and at his valuable inventions straight through his life from 1912 right up to his suicide in 1954, the drama of the whole thing becomes unendurably moving. It is a story that I think every electronic engineer should read for his own satisfaction, as well as every thinking amateur in "hi fi" and related arts—even the shortwave hams. (He was right in there, too.)

For this was perhaps the very last of the great American "solo" inventors, in the age of the corporate research lab and the high-powered team system. Armstrong was, as we now can see so poignantly, right in the line of Franklin, Morse, Henry, Edison, Bell, and perhaps as big a man as any of them in terms of the sheer force of his original contributions to his art. But this time it was one man against the huge power of the modern corporations who control our big industries. He was a terrific fighter and he fought, endlessly, for almost forty years straight. And yet he was beaten to the wall, out-argued, out-reasoned, smoothly derailed—all in the most skillful fashion—as though he were some imposter. The semantics of the legal mind and the decisions of the courts of the land and the government regulatory agencies, against plain engineering fact, flying in the face of reality (other than the reality of power interests and money), are just beyond belief in the reading. You may challenge this book if you dare. I doubt if you will.

And so I recommend *Man of High Fidelity: Edwin Howard Armstrong*, written by Lawrence Lessing (who is with *Fortune* and was once at *Scientific American*), published by J. B. Lippincott in 1956, to all who can find a copy, including engineers at R.C.A., General Electric, Zenith, Philco, Westinghouse, A.T.&.T. and associated enterprises. (I think engineers will go along with Mr. Lessing. It isn't they who make corporate decisions and put forth corporate policy.) I only wish I could write half as competently about technical matters as Lawrence Lessing does. It'll take a pretty fancy expert, I think, to find any major bloopers of a technical sort in this detailed account of the development of radio. Every page reads convincingly.

Perhaps by now someone will have taken up the paper book rights to this work. Then, maybe come fall, you can get the book again. Meanwhile, space having given out, I'll have a few more Armstrong comments next month. Æ



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